AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1-70. (canceled)

71. (currently amended) A semiconductor device having a semiconductor multi-layer structure which includes at least an active layer including at least one luminescent layer of $In_xAl_yGa_{1-x-y}N$ ($0<x<1$, $0\leq y\leq 0.2$), and at least a part of said at least one luminescent layer acting as at least a quantum well,

wherein said semiconductor device satisfies at least one of:

a first condition that a threshold mode gain of each of said at least quantum well is more than 12 cm^{-1}, and

a second condition that said semiconductor device has an internal loss "α_i" (cm^{-1}) which satisfies $\alpha_i > 12xn - \alpha_m$ (cm^{-1}), where "α_m" is a mirror loss, and "n" is a number of said at least quantum well; and

a third condition that said semiconductor device has a slope efficiency "S" (W/A) which satisfies: $S < 3x\{\alpha_m/(12xn)\}x[\{(1-R_1)\sqrt{(R_2)}\}/\{(1-\sqrt{(R_1R_2)})x(\sqrt{(R_1)}+\sqrt{(R_2)})\}]$, where "$R_1$" is a first reflectance of a first cavity facet, from which a light is emitted, "R_2" is a second reflectance of a second cavity

facet opposite to said first cavity facet, "α_m" is a mirror loss, and "n" is a number of said at least quantum well, and

wherein said semiconductor device further satisfies at least one of:

a fourth condition that a differential gain "dg/dn" of said at least active layer satisfies dg/dn≥1.0 10 $^{-20}$ (m^2)1; and

a fifth condition that standard deviations of microscopic and macroscopic fluctuations in a band gap energy of said at least luminescent layer are not more than [[of]] 40 meV.

72-74. (canceled)

75. (previously presented) The semiconductor device as claimed in claim 71, wherein said semiconductor device has a cavity length "L" of not less than 1000 micrometers, and said first reflectance "R_1" is not more than 20%, said second reflectance "R_2" is not less than 80% and less than 100%, and said slope efficiency "S" satisfies S < 2.1/n (W/A).

76. (previously presented) The semiconductor device as claimed in claim 71, wherein said luminescent layer has a photo-luminescence peak wavelength distribution of not more than 40 meV.

77. (original) The semiconductor device as claimed in claim 71, wherein said semiconductor multi-layer structure comprises a gallium-nitride-based multi-layer structure.

78. (original) The semiconductor device as claimed in claim 77, wherein said gallium-nitride-based multi-layer structure extends over a gallium-nitride-based substrate.

79. (original) The semiconductor device as claimed in claim 77, wherein said gallium-nitride-based multi-layer structure extends over a sapphire substrate.

80. (original) The semiconductor device as claimed in claim 77, wherein said gallium-nitride-based multi-layer structure extends over a substrate having a surface dislocation density of less than $1x10^8$ /cm^2.

81-120. (canceled)

121. (previously presented) The semiconductor device as claimed in claim 71, wherein a standard deviation "Δ_x" in the "microscopic fluctuation" of the indium composition is not more than 0.067.

122. (previously presented) The semiconductor device as claimed in claim 121,

wherein said semiconductor device has a slope efficiency "S" (W/A) which satisfies:

$S < 3x\{\alpha_m / (12xn)\}x[\{(1-R_1)\sqrt{(R_2)}\}/\{(1-\sqrt{(R_1R_2)})x$ $(\sqrt{(R_1)}+\sqrt{(R_2)})\}]$, where "$R_1$" is a first reflectance of a first cavity facet, from which a light is emitted, "R_2" is a second reflectance of a second cavity facet opposite to said first

cavity facet, "α_m" is a mirror loss, and "n" is a number of said at least one quantum well.

123. (previously presented) The semiconductor device as claimed in claim 122, wherein said semiconductor device has a cavity length "L" of not less than 1000 micrometers, and said first reflectance "R_1" is not more than 20%, said second reflectance "R_2" is not less than 80% and less than 100%, and said slope efficiency "S" satisfies $S < 2.1/n$ (W/A).

124. (previously presented) The semiconductor device as claimed in claim 121, wherein said semiconductor device has an internal loss "α_i" (cm^{-1}) which satisfies $\alpha_i > 12xn - \alpha_m$ (cm^{-1}), where "α_m" is a mirror loss, and "n" is a number of said at least one quantum well.

125. (previously presented) The semiconductor device as claimed in claim 121, wherein said semiconductor device has a photo-luminescence peak wavelength distribution of not more than 40 meV in said active layer.

126-128. (canceled)

129. (new) The semiconductor device as claimed in claim 71, wherein the microscopic fluctuations are not less than 20 meV.

130. (new) The semiconductor device as claimed in claim 71, wherein a dispersion degree of a thermal carrier in said

active layer is estimated by varying a temperature measurement, so as to determine said microscopic fluctuation.

131. (new) The semiconductor device as claimed in claim 71, wherein, when light is illuminated on a surface of the semiconductor device, the microscopic fluctuation is mesurable based on a photo-luminescence life-time.